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Regenerate California Comments on SB 100 2025 Kick Off Workshop

Additional submitted attachment is included below.

September 8, 2023

California Energy Commission
715 P Street
Sacramento, CA 95814

Submitted online via comment submittal portal

RE: Comments on CEC Senate Bill 100 Kickoff Workshop

Dear Commissioners,

The Regenerate California Campaign, a partnership of the California Environmental Justice Alliance and Sierra Club, appreciates the opportunity to comment on the California Energy Commission (CEC)'s Senate Bill (SB) 100 Kickoff Workshop on August 22, 2023. Together, we share a vision for California's most impacted communities to have access to clean energy, good jobs, and clean air.

We support the CEC's efforts to evaluate pathways to meet California's goal of achieving 100% clean energy by 2045 while maintaining reliability and affordability, weighing non-energy benefits, and minimizing land use impacts. However, we are concerned that the CEC's approach, as presented in the Workshop, fails to meet the letter and spirit of SB 100 as well as other critical climate and environmental justice policies and laws. Several key changes are therefore needed. To develop a truly equitable roadmap for meeting SB 100 goals, we urge the CEC to:

1. Align all Pathways with Public Health, Environmental Justice, and Energy Mandates:
    a. Assume Gas Plant Retirements in All Pathways
    b. Correct Erroneous Interpretation of "Retail Sales"
2. Reliability:
    a. Focus on Community Resilience and Maximizing Distributed Energy Resources
    b. Model Virtual Power Plants
    c. Exclude Carbon Capture and Sequestration as a Resource
    d. Exclude Hydrogen Combustion as a Resource
3. Affordability:
    a. Benchmark Costs Against the Reality of Rising Costs of Retaining Gas Plants
    b. Account for the Full Costs to Ratepayers of Capitalized Infrastructure
    c. Fully Account for the Costs of Hydrogen
4. Invite Additional Public Feedback on Non-Energy Benefits and Social Costs
5. Minimize Land Use Impacts

We provide more detail on each of these important changes below.

I. Align Pathways with Public Health, Environmental Justice, and Energy Policies

A. Assume Gas Plant Retirements in All Pathways

The Reliability and Production Cost models will evaluate each pathway portfolio's ability to meet reliability standards and stressed supply conditions. However, the CEC only appears to consider retirements of all combustion resources in the Combustion Retirement Scenario.[1] This is inconsistent with policy and statutory requirements, which require planning for local retirements. In particular, California law requires advanced planning to reduce reliance on fossil resources. Section 454.57(e)(4) of the Public Utilities Code requires that the State provide "resource projections that, combined with transmission expansions, are expected to substantially reduce, no later than 2035, the need for non-preferred resources in local capacity areas."[2] These requirements, which were promulgated in SB 887, require California to "substantially reduce" the need for non-preferred resources.[3] California must start as soon as possible because Load Serving Entities are already planning their procurement out to 2035, and SB 887 requires that reductions occur "no later than 2035."[4]

[1] See CEC, CPUC, CARB, 2025 SB 100 Report Vision, Slides 10-15, available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=251718&DocumentContentId=86699.
[2] Public Utilities Code Section 454.57(e)(4).
[3] Public Utilities Code Section 454.57(e)(4).
[4] Public Utilities Code Section 454.57(e)(4).

Consideration of retirements is also consistent with, and in furtherance of, other state policies and requirements. For example, Governor Newsom has emphasized that: "[w]e must remove carbon emissions from our energy sources to support a sustainable future" and that "[a]lthough California has made great strides in eliminating coal power plants and increasing renewable energy resources, our current electricity system is still producing greenhouse gas emissions and contributing to unhealthy air quality in communities."[5] Moreover, the Legislature has found that the State needs "drastic reductions in fossil fuel use"[6] and, through SB 1020, it accelerated the interim targets for renewable and zero-carbon resources to supply electricity.[7]

Thus, the CEC should model retirements of gas combustion in all scenarios, including by analyzing retirement of all combustion resources by 2035 and 2045, respectively, and retirement of all combustion resources in disadvantaged communities (DACs) by 2030. Failing to assume, and model, retirement of gas combustion does nothing to inform achievement of the SB 100, SB 887 and SB 1020 mandates to achieve 100% clean energy and drastically reduce fossil fuel use statewide.

B. Correct the Erroneous Interpretation of "Retail Sales"

As the CEC describes, SB 100 "[s]ets a 2045 goal of ***powering*** all retail electricity sold in California with renewable and zero-carbon resources."[8] Yet, the CEC fails to include all the energy that must be generated in order for the electricity sold to meet demand. Rather, it only includes a subset of the needed electricity by artificially separating the amount of electricity sold from the line losses inherent in that electricity delivery. This interpretation is inconsistent with the intent and plain text of the statute and must be changed.

SB 100 was a transformative piece of legislation that codified the requirement for California's electricity system reaching 100% clean and renewable energy by 2045. When signing the bill into law, then-Governor Jerry Brown explained that achieving 100% clean and renewable energy would not be easy, and that the path must focus on increased energy storage, efficiency, and demand response.[9] Neither the Governor nor the Legislature ever once mentioned the possibility of keeping the gas fleet online—because that was not the intent of SB 100. Rather, SB 100 puts California on a path to a zero-carbon grid, in which gas-fired power plants no longer disrupt the climate and public health.

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[5] Office of Governor Gavin Newsom, *Electricity System of the Future* (July 30, 2021), https://www.gov.ca.gov/wp-content/uploads/2021/07/Electricity-System-of-the-Future-7.30.21.pdf.
[6] Cal. Assembly Bill ("AB") 1279, Section 1 (2022).
[7] Cal. SB 1020 (2022).
[8] CEC, 2021 SB 100 Report, Slide 2, available at https://ww2.arb.ca.gov/sites/default/files/2021-06/cec_sp_kickoff-electricity_june2021.pdf (emphasis added).
[9] Id.

The plain text of the statute requires California to plan for "a transition to a zero-carbon electric system."[10] SB 100's legislative history confirms that it "establishes a new policy which plans for *all* electricity by December 31, 2045 to be from a mix of both RPS-eligible and zero-carbon resources."[11] The legislative history also confirms that zero-emissions requirement covers the "remaining electricity procurement,"[12] and it warns that "new assets could be stranded assets in the future if they are powered by fossil fuels."[13] In other words, SB 100 requires that all electricity in California be either renewable or zero-carbon, not from fossil fuels. Modeling the retirement of combustion resources by 2045 at the latest in every pathway best meets the requirements of that mandate.

While the statutory language on its face applies to "retail sales," that language is not intended to artificially separate transmission and distribution losses. This interpretation would allow SB 100 to achieve an absurd result—under CEC's interpretation, the electric sector would not decrease emissions at all beyond the target that most utilities are projecting to meet in 2030 because coverage of SB 100 would only reach around 80% of all electricity generation. Not only is this absurd, it is inconsistent with how retail sales is interpreted in practice and the plain language of SB 100.

Specifically, the CEC appears to rely on an interpretation of SB 100 that separates all line losses from retail sales to justify the electric sector not decreasing emissions on the trajectory required by SB 100.[14] This interpretation assumes that line losses are somehow separate from the retail sales and that the power generated and lost is not to be included within retail sales. This assumption is factually incorrect and thus it is unreasonable, arbitrary and capricious. Retail sales in California, like throughout the country, include the losses incurred to meet the relevant energy demand. In other words, retail customers pay for transmission and distribution losses in their bills as they are included in the energy requirement to fulfill a particular retail sale. As the New England Independent System Operator describes, line losses are one of the critical components that determines the actual price of the sale.[15] Including line losses in retail sales is consistent with a long line of regulatory decisions because the California Public Utilities Commission (CPUC) scales up marginal energy costs by estimated line losses in general rate cases.[16]

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[10] Cal. Public Util. Code Section 454.53(a), (d)(2).
[11] SB 100 Senate Floor Analysis, p. 4 (Aug. 28, 2018) (emphasis added).
[12] SB 100 Senate Floor Analysis, p. 4 (August 28, 2018).
[13] SB 100 Senate Floor Analysis, p. 4 (August 28, 2018).
[14] Staff Proposal, p. 60, note 110.
[15] ISO New England, "Wholesale vs. Retail Electricity Costs," *available at* https://www.iso-ne.com/about/what-we-do/in-depth/wholesale-vs-retail-electricity-costs
[16] California Energy Commission. "A Review of Transmission Losses in Planning Studies." *https://efiling.energy.ca.gov/GetDocument.aspx?tn=62058*, Aug. 2011.

CPUC decisions have shown that line losses are not separate from retail sales - they are integral to the sale and the procurement decisions necessary to provide the energy to meet that sale.[17] California ratepayers have been paying for these line losses in their bills, demonstrating that line losses are in no way separate from retail sales.

The statutory language supports including the power lost to distribution and transmission in interpreting the terms "retail sales". Indeed, SB 100 was called the "100 Percent Clean Energy Act," not the 85% or 80% Clean Energy Act, like the CEC is attempting to interpret it. This is also confirmed by the plain language which ties the 100% requirement to procurement, not to the smaller amount of electricity that may enter a customer's building after a loss. Indeed, the language requires sellers "to *procure a minimum quantity* of electricity products from eligible renewable energy sources for each…compliance period."[18] Utility procurement decisions assume that some energy may be lost when determining how much to procure to meet a certain requirement. That is why retail sales include losses within the sale—they are an inseparable part of the same transaction. In other words, to procure renewable energy that is "equal to an average of 60 percent of the sales," a retail seller must procure more than the end user needs to account for losses. Inclusion of the "retail sales" language was not meant to exclude this procurement for losses because the language requires procurement "equal" to what is necessary to meet those retail sales.

The only direct mention of line losses within the Health and Safety Code requires explicit consideration of line losses as part of greenhouse gas emission accounting. In relevant part, it states the following:

> "Statewide greenhouse gas emissions" means the total annual emissions of greenhouse gases in the state, including all emissions of greenhouse gases from the generation of electricity delivered to and consumed in California, accounting for transmission and distribution line losses, whether the electricity is generated in state or imported. Statewide emissions shall be expressed in tons of carbon dioxide equivalents.[19]

This definition suggests that the losses are tied to and need to be included in any calculation of greenhouse gas emissions just like imports. The CEC wrongly includes only half of this equation by considering imports in its SB 100 calculation while leaving out emissions from line losses. This approach is in direct conflict with the Health and Safety Code. Both the Health and Safety Code and the plain language of SB 100 support including both losses and imports as integral to determining the greenhouse gasses (GHGs) from the electric sector. Federal law also confirms that line losses are included within sales, by requiring payments under the Public Utility

[17] See California Public Utilities Commission, Decision 11-12-053 (Dec. 15, 20122), at 39
[18] Public Util. Code Section 399.15.
[19] Health and Safety Code, 38505.

Regulatory Policies Act to include line losses because it reflects the costs a utility would have had to pay had they not contracted for the energy from a Qualifying Facility.[20]

SB 100 must cover the amount of energy necessary to "power" the retail sales, since that is how the statute is written, how billing is done, and how procurement is performed. CEC cannot and should not interpret "retail sales" differently here. The CEC must correct this legal error and comply with SB 100 as written.

II. Reliability

A. Focus On Community Resilience and Distributed Energy Resources

California has long focused its reliability planning on transmission reliability and required procurement to reach a "1 day with an event in 10 years" standard for transmission outages. This focus on transmission has led to increased reliability requirements and decisions to keep costly polluting resources online even though their contribution to reliability is likely minimal at best. To address the concerns related to reliability, California should instead devote its resources to improving distribution and local reliability.

A recent report by PG&E shows that the vast majority of outages over the last five years are attributed to the distribution system.[21] Not only are distribution outages the majority of outages, distribution outages also account for the majority of time customers are losing power.[22]

Given these facts, the CEC should focus on increasing local resiliency as the majority of reliability events are from the distribution system. A focus on local resilience is the best way to improve reliability for households, and given the increasing impacts of climate change, local resilience is important to ensure that households can be safe and healthy. Furthermore, rather than spend over a billion dollars on polluting plants[23] that are unlikely to address local reliability, the state could be spending that money on community-based solutions that lower the total average outages that households experience.

To accomplish this, the CEC should incorporate high distributed energy resources (DER) assumptions in each pathway. Clean microgrids, community solar, and other DERs will be

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[20] See CPUC California Public Utilities Commission Decision 09-05-030 (Cal. P.U.C. May 2009).

[21] Pacific Gas and Electric Company. *2022 Annual Electric Reliability Report*. 15 July 2023, www.pge.com/pge_global/common/pdfs/outages/planning-and-preparedness/safety-and-preparedness/grid-reliability/electric-reliability-reports/CPUC-2022-Annual-Electric-Reliability-Report.pdf, page 11-12.

[22] Id.

[23] Roth, Sammy. "Despite Climate Goals, California Will Let Three Gas Plants Keep Running." *Los Angeles Times*, 16 Aug. 2023, www.latimes.com/environment/newsletter/2023-08-15/despite-climate-goals-california-will-let-three-gas-plants-keep-running-boiling-point.

increasingly critical for improving reliability while transitioning the grid to cleaner resources.

B. To Appropriately Model the Costs of DERs' Diverse Grid Services, the CEC Should Model Virtual Power Plants

All scenarios should assume DERs can operate in aggregation as Virtual Power Plants (VPPs) to ensure the modeling recognizes the full potential for DERs to deliver cost-effective resource adequacy, avoid investments in distribution and transmission, and provide other grid services. In general terms, a VPP is a fleet of many DERs that uses software to control the individual resources and operate them together as a single grid-scale resource. A VPP bridges the concepts of energy demand and supply and offers flexible, dispatchable capacity and energy. The director of the US Department of Energy's Loan Programs Office, has said that VPPs "not only open the grid to a whole new utility-scale, behind-the-meter supply, but also coordinate disparate DERs into holistic, demand-flexible resources."[24]

A virtual power plant can be composed of a single technology, or a combination of multiple technologies. One example of a VPP of customer batteries is one managed by Tesla, using Powerwall batteries aggregated into a VPP in PG&E territory to provide energy during grid emergency events called by the California Independent System Operator (CAISO).[25] A multi-technology VPP example, OhmConnect aggregates solar-charged energy storage, HVAC heat pumps, and smart thermostats to respond to grid stress.[26]

Through VPP aggregations, DERs provide grid resources that utilities otherwise would rely on centralized power plants to provide. VPPs can improve grid reliability, keep energy costs affordable, enable decarbonization of the electric sector, and support and stimulate transportation and building electrification, while advancing goals of equity and public health and enabling utility customers to play an active part in the energy system.[27] Given these many benefits, all scenarios should include consideration of VPPs.

C. Exclude Carbon Capture and Sequestration as a Resource

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[24] Jigar Shah, "Achieving a zero-carbon grid: opportunities in virtual power plants", PV Magazine (May 31, 2022), available at https://pv-magazine-usa.com/2022/05/31/achieving-a-zero-carbon-grid-opportunities-in-virtual-power-plants/.

[25] Tesla, Join the Tesla Virtual Power Plant, available at https://www.tesla.com/support/energy/tesla-virtual-power-plant-pge#events.

[26] OhmConnect Surpasses 250,000 Connected Appliances and Devices in Homes; Collaborates with SunPower and Carrier to Enhance Grid Resiliency, PR Newswire (Mar. 31, 2022), available at https://www.prnewswire.com/news-releases/ohmconnect-surpasses-250-000-connected-appliances-and-devices-in-homes-collaborates-with-sunpower-and-carrier-to-enhance-grid-resiliency-301514857.html.

[27] Kevin Brehm et al., Virtual Power Plants, Real Benefits, RMI at 13-17 (Jan. 2023), available at https://rmi.org/insight/virtual-power-plants-real-benefits/.

The CEC should not include carbon capture and sequestration (CCS) as an energy resource in its modeling. The 2021 SB 100 Joint Agency Report excluded gas- and coal-fired generation with CCS from the modeling because there was no cost or performance data for 100% carbon capture and because pairing CCS with coal-fired generation would be "[i]ncompatible with the state's public health priorities."[28] Two years later, CCS with 100% capture is still infeasible. Moreover, relying on CCS in the power sector is incompatible with California's public health needs, regardless of whether the power generator burns gas or coal.

CCS' public health and water resource impacts make it an inappropriate technology for California's energy planners to rely on. Facilities that use CCS still release health-damaging air pollution, which can actually become worse because 10 to 40 percent more fuel is required to power CCS equipment that does not achieve 100% capture.[29] With assumptions like 100% capture, the added fuel requirement, or energy penalty, is likely to be at or above the high end of this estimate. Relying on CCS or any other pollution-emitting resource in California's most polluted air basins—where achieving health-based air quality standards will require a widespread transition to zero-emission technologies across industrial facilities of all sizes[30]—would directly undermine public health policy. Moreover, increasing gas production to meet the energy requirements of CCS equipment would exacerbate environmental harms in the communities that already bear the burdens of fossil fuel extraction.

In addition, CCS can double water requirements and increase toxic wastewater discharge, and underground storage of carbon dioxide (CO2) can contaminate aquifers.[31] The water demands of CCS equipment make CCS particularly inappropriate for California, where climate change is exacerbating water scarcity challenges.

The CO2 pipeline and storage systems that would be necessary for CCS also pose significant public health risks, as ruptures or leaks in CO2 infrastructure can lead to injury or suffocation of

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[28] CEC, 2021 SB 100 Joint Agency Report, page 9, available at https://www.energy.ca.gov/publications/2021/2021-sb-100-joint-agency-report-achieving-100-percent-clean-electricity.

[29] Vasudevan, Suraj, et al. "Energy Penalty Estimates for CO2 Capture: Comparison Between Fuel Types and Capture-combustion Modes." *Elsevier*, Mar. 2016, precaution.org/lib/ccs_energy_penalty_for_coal_vs_natural_gas.2016.pdf and Widder, SH, et al. "Sustainability Assessment of Coal Fired Power Plants With Carbon Capture and Storage", Pacific Northwest National Laboratory, Oct. 2011, www.pnnl.gov/main/publications/external/technical_reports/PNNL-20933.pdf.

[30] South Coast Air Quality Management District, 2022 Air Quality Management Plan, at ES-5 (Dec. 2022) ("there is no viable pathway to achieve the needed reductions without widespread adoption of zero emissions (ZE) technologies across all mobile sectors and stationary sources, large and small"), http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf?sfvrsn=16.

[31] Eldardiry, Hisham, and Emad Habib. "Carbon Capture and Sequestration in Power Generation: Review of Impacts and Opportunities for Water Sustainability." *Energy, Sustainability and Society*, vol. 8, no. 1, Springer Science and Business Media LLC, Feb. 2018. *Crossref*, https://doi.org/10.1186/s13705-018-0146-3.

nearby residents.[32] Past incidents underscore how ill-prepared we are to regulate CO2 pipeline safety and handle CO2 accidents.[33] For all of these reasons, the modeling should not rely on CCS and the CEC should instead rely on clean, zero-emissions resources.

D. Exclude Hydrogen Combustion as a Resource

The CEC should not consider combustion of hydrogen (whether pure hydrogen or hydrogen blended with methane) as a potential resource because of its public health impacts as well as hydrogen infrastructure and cost issues outlined in further detail below. Evidence shows that combusting hydrogen can substantially increase nitrogen oxides (NOx) emissions at gas plants. According to a study conducted by General Electric on its combustion turbines, a 50/50 mixture of hydrogen and fossil gas (by volume) increased concentrations of NOx in gas exhaust by 35 percent.[34] Such combustion does not align with state and federal clean air requirements, especially in non-attainment areas like the South Coast Air Quality Management District.

If the CEC were going to consider any hydrogen in the modeling, it should be limited to electrolytic green hydrogen produced from additional renewables and utilized only in zero-emission fuel cells that can also recycle some of the water used in production. The modeling would have to assume first that renewables are used to meet all electricity demand that can be met by renewables, based on hourly matching. Excess production once all such demand is met could be considered additional and could be assumed, for modeling purposes, to generate hydrogen to use in fuel cells that meet power system needs that renewables cannot meet.

Evidence shows that fuel cells can provide power for systems as large as utility power stations, and groups of modular fuel cell systems have been joined to create small power plants up to 63 MW in size.[35] As one study observed, "[w]hile the larger deployments of solar and wind necessary to generate surplus renewable energy continue to be scaled, higher capacity fuel cell technology and costs are likely to improve."[36]

III. Affordability

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[32] Kuprewicz, Richard. *Accufacts' Perspectives on the State of Federal Carbon Dioxide Transmission Pipeline Safety Regulations as It Relates to Carbon Capture, Utilization, and Sequestration Within the U.S.* Pipeline Safety Trust, 23 Mar. 2022, pstrust.org/wp-content/uploads/2022/03/3-23-22-Final-Accufacts-CO2-Pipeline-Report2.pdf.
[33] Zegart, Dan. "Gassing Satartia: Carbon Dioxide Pipeline Linked to Mass Poisoning." *HuffPost*, 17 Sept. 2021, www.huffpost.com/entry/gassing-satartia-mississippi-co2-pipeline_n_60ddea9fe4b0ddef8b0ddc8f.
[34] Jeffrey Goldmeer et al., *Hydrogen as a Fuel for Gas Turbines*, General Electric, at 3–4 (2021), https://www.ge.com/content/dam/gepower-new/global/en_US/downloads/gas-new-site/future-of energy/hydrogen-fuel-for-gas-turbines-gea34979.pdf.
[35] Congressional Research Service, *Hydrogen in Electricity's Future*, at 10 (June 30, 2020), https://crsreports.congress.gov/product/pdf/R/R46436.
[36] Saadat et al., *Reclaiming Hydrogen for a Renewable Future* (2021) at 26, https://earthjustice.org/wp content/uploads/hydrogen_earthjustice_2021.pdf.

A. Benchmark Costs Against the Reality of Rising Costs of Retaining Gas Plants [37]

To ensure that the modeling more accurately reflects affordability concerns, the CEC must ensure that the gas assumptions are benchmarked against reality. The cost of keeping polluting gas plants online is only going up, with the Commission's recent Resource Adequacy (RA) report noting "Local RA prices have also increased significantly."[38] Indeed, recent data shows that contracts can cost over $16 per kW-month.[39] This translates into around $192/kW-year, which is substantially higher than the cost assumed in the current modeling.[40] Indeed, gas prices in modeling should reflect at least the costs of providing local RA and flexible RA as well as system RA like many of the gas plants currently do.

In addition to high RA costs, there are many costs of retaining gas that make them economically risky, including high maintenance costs (especially for cycling units), the costs to maintain aging fossil fuel pipelines and infrastructure, the costs of additional air pollution including potential methane leaks, the social costs of carbon, and the high market costs due to market power. The Joint Agency SB 100 Report acknowledged that a comparison to the Commission's average RA prices show that they are likely underestimating gas retention costs, and "[h]igher than modeled gas fleet maintenance costs may decrease economic gas retention or increase total scenario cost or both."[41]

The levelized fixed costs of gas plants should be significantly increased to reflect the high current prices in addition to projecting rising gas retention costs. At the very least, the modeling should reflect the current average RA prices for contracting with existing facilities for system, local, and flexible RA to more accurately reflect ratepayer costs.

B. Account for the Full Costs to Ratepayers of Capitalized Infrastructure

The cost modeling for the competing scenarios must account for the bill impacts of capitalizing certain infrastructure. Because the utilities earn a rate of return on their capital spending, if a regulated utility spends $1 million on capital infrastructure, that spending will have a greater impact on energy affordability than if it spent $1 million on costs that do not constitute capital spending. The CPUC has recognized that capital costs are "significantly more expensive for ratepayers over time."[42] Modelers can develop reasonable estimates of the additional

[37] See 2025 SB 100 Report Vision, slides 19, Available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=251718&DocumentContentId=86699.
[38] CPUC, 2021 Resource Adequacy Report (March 2023) at 14 https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resource-adequacy-homepage/2021_ra_report.pdf
[39] Id. at 27-28 (showing September contracts over $16/kW month.)
[40] Compare $192/kW*yr with $120 (assuming below $120/kW*yr for the majority of years in the time period).
[41] CEC, CARB, CPUC, SB 100 Joint Agency Report, March 2021, p. 79, *available at* https://www.energy.ca.gov/sb100.
[42] See CPUC California Public Utilities Commission Decision 22-11-040, at 105 (Cal. P.U.C. Nov. 17, 2022).

affordability impacts of capital projects based on the expected depreciation schedule of the assets and the utilities' authorized rates of return.[43] Ignoring the bill impacts of capitalizing utility spending would skew the analysis in favor of capital utility assets, disfavoring DERs and other competing assets that could potentially provide the same services at lower cost to ratepayers.

C. Fully Account for the Costs of Hydrogen

At the SB 100 Kickoff workshop, CEC staff answered a question from a member of the public about whether they will be modeling how hydrogen is supplied, stored, and transmitted by stating that they did not believe they would model the transport of hydrogen. It would be a major and unreasonable oversight to ignore the cost of hydrogen delivery and storage, which would be a significant component of the cost of using hydrogen in the power sector. We expect that the CEC would consider these costs, given that the CPUC's IRP modeling includes hydrogen pipeline and storage costs.[44] To appropriately consider this category of costs, the modeling would account for the costs of extending pipeline infrastructure to each facility that operates on hydrogen. If hydrogen pipelines were not constructed to serve generating units, the generators would need to make enormous investments in on-site hydrogen production and storage infrastructure. If the CEC anticipates generators taking that approach, they should model the on-site production and storage costs accordingly.

IV. Invite Additional Public Feedback on Non-Energy Benefits (NEBs) and Social Costs

We agree with the CEC that SB 100 scenarios should consider land-use, public health and air quality, water supply and quality, economics and resilience.[45] We further agree that the CEC should also consider the social cost of carbon and estimated health impacts for milestone years and cumulative impacts.[46] The CEC should rely on the best available data for quantification of NEBs, provide the data sources, and invite public feedback. Given the importance of NEBs and their analysis for California's environmental justice communities, Regenerate strongly supports the CEC holding a dedicated workshop and seeking comments to improve modeling and quantification of NEBs, particularly in the areas of measuring specific impact to DACs, air quality and public health impacts, cost assumptions, avoided harms, and reliability.

V. Minimize Land Use Impacts

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[43] *See* CPUC, Utility Costs and Affordability of the Grid of the Future, May 2021, pp. 20-21, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2021/senate-bill-695-report-2021-and-en-banc-whitepaper_final_04302021.pdf.

[44] CPUC, Draft 2023 Inputs and Assumptions, June 2023, p. 99, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2023-irp-cycle-events-and-materials/draft_2023_i_and_a.pdf.

[45] See 2025 SB 100 Report Vision, slide 21, Available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=251718&DocumentContentId=86699.

[46] Id.

California is a global biodiversity hotspot. The 2021 SB 100 Joint Agency Report acknowledged the importance of California's lands as "naturally capable of sequestering huge amounts of carbon to limit climate change and are, therefore, a key component of meeting the state's carbon neutrality goals."[47] SB 100 planning should make every effort to minimize the development and degradation of our natural and working lands. The CEC should first maximize and optimize the use of DERs to support local and system reliability and then prioritize energy generation and transmission projects that will not only enable the retirement of fossil fuel use but also minimize habitat degradation. Accordingly, transmission development should prioritize existing transmission and transportation rights of way wherever possible, including interstate corridors and rail lines. Lastly, we recommend the CEC apply the SB 100 Terrestrial Climate Resilience Study Screen to each of the pathways to better understand tradeoffs when using a more stringent land use screen that incorporates information about lands that have better probability of conserving refugia for species adapting to climate change.

Proposed Pathways

The Regenerate California Campaign urges the CEC to incorporate our recommendations as it moves forward modeling pathways to 100% clean energy. The current iteration of SB 100 planning is most important to ensuring that California can feasibly achieve its goals to mitigate the worst impacts of the climate crisis and advance equity instead of reinforcing the harms disproportionately borne by environmental justice communities. We look forward to continuing working together to meet these goals.

Sincerely,

Ari Eisenstadt, Energy Equity Manager, California Environmental Justice Alliance

Shana Lazerow, Legal Director, Communities for a Better Environment

Marven Norman, Policy Coordinator, Center for Community Action and Environmental Justice

Sofi Magallon, Policy Advocate, Central Coast Alliance United for a Sustainable Economy

Teresa Cheng, California Field Manager, Sierra Club

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[47] CEC, 2021 SB 100 Joint Agency Report, page 113, available at https://www.energy.ca.gov/publications/2021/2021-sb-100-joint-agency-report-achieving-100-percent-clean-electricity.